



SEQUENCE LISTING

<110> AVERBACK, PAUL

<120> METHODS OF USING NEURAL THREAD PROTEINS TO TREAT TUMORS
AND CONDITIONS REQUIRING THE REMOVAL OR DESTRUCTION OF
CELLS

<130> 018792-0199

<140> 10/092,934

<141> 2002-03-08

<150> 60/273,957

<151> 2001-03-08

<160> 11

<170> PatentIn. Ver. 2.1

<210> 1

<211> 1442

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (15)..(1139)

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	1				5					10						
aat	ggc	gca	atc	tca	gct	cac	cgc	aac	ctc	cgc	ctc	ccg	ggt	tca	agc	98
Asn	Gly	Ala	Ile	Ser	Ala	His	Arg	Asn	Leu	Arg	Leu	Pro	Gly	Ser	Ser	
	15				20					25						
gat	tct	cct	gcc	tca	gcc	tcc	cca	gta	gct	ggg	att	aca	ggc	atg	tgc	146
Asp	Ser	Pro	Ala	Ser	Ala	Ser	Pro	Val	Ala	Gly	Ile	Thr	Gly	Met	Cys	
	30				35					40						
acc	cac	gct	cgg	cta	att	ttg	tat	ttt	ttt	tta	gta	gag	atg	gag	ttt	194
Thr	His	Ala	Arg	Leu	Ile	Leu	Tyr	Phe	Phe	Leu	Val	Glu	Met	Glu	Phe	
	45				50					55					60	
ctc	cat	gtt	ggt	cag	gct	ggt	ctc	gaa	ctc	ccg	acc	tca	gat	gat	ccc	242
Leu	His	Val	Gly	Gln	Ala	Gly	Leu	Glu	Leu	Pro	Thr	Ser	Asp	Asp	Pro	
			65						70						75	
tcc	gtc	tgg	gac	tcc	caa	agt	gct	aga	tac	agg	act	ggc	cac	cat	gcc	290
Ser	Val	Ser	Ala	Ser	Gln	Ser	Ala	Arg	Tyr	Arg	Thr	Gly	His	His	Ala	
			80					85						90		
cgg	ctc	tgc	ctg	gct	aat	ttt	tgt	ggt	aga	aac	agg	gtt	tca	ctg	atg	338
Arg	Leu	Cys	Leu	Ala	Asn	Phe	Cys	Gly	Arg	Asn	Arg	Val	Ser	Leu	Met	
		95					100					105				

tgc cca agc tgg tct cct gag ctc aag cag tcc acc tgc ctc agc ctc	386
Cys Pro Ser Trp Ser Pro Glu Leu Lys Gln Ser Thr Cys Leu Ser Leu	
110 115 120	
cca aag tgc tgg gat tac agg cgt gca gcc gtg cct ggc ctt ttt att	434
Pro Lys Cys Trp Asp Tyr Arg Arg Ala Ala Val Pro Gly Leu Phe Ile	
125 130 135 140	
tta ttt ttt tta aga cac agg tgt ccc act ctt acc cag gat gaa gtg	482
Leu Phe Phe Leu Arg His Arg Cys Pro Thr Leu Thr Gln Asp Glu Val	
145 150 155	
cag tgg tgt gat cac agc tca ctg cag cct tca act cct gag atc aag	530
Gln Trp Cys Asp His Ser Ser Leu Gln Pro Ser Thr Pro Glu Ile Lys	
160 165 170	
cat cct cct gcc tca gcc tcc caa gta gct ggg acc aaa gac atg cac	578
His Pro Pro Ala Ser Ala Ser Gln Val Ala Gly Thr Lys Asp Met His	
175 180 185	
cac tac acc tgg cta att ttt att ttt att ttt aat ttt ttg aga cag	626
His Tyr Thr Trp Leu Ile Phe Ile Phe Ile Phe Asn Phe Leu Arg Gln	
190 195 200	
agt ctc aac tct gtc acc cag gct gga gtg cag tgg cgc aat ctt ggc	674
Ser Leu Asn Ser Val Thr Gln Ala Gly Val Gln Trp Arg Asn Leu Gly	
205 210 215 220	
tca ctg caa cct ctg cct ccc ggg ttc aag tta ttc tcc tgc ccc agc	722
Ser Leu Gln Pro Leu Pro Pro Gly Phe Lys Leu Phe Ser Cys Pro Ser	
225 230 235	
ctc ctg agt agc tgg gac tac agg cgc cca cca cgc cta gct aat ttt	770
Leu Leu Ser Ser Trp Asp Tyr Arg Arg Pro Pro Arg Leu Ala Asn Phe	
240 245 250	
ttt gta ttt tta gta gag atg ggg ttc acc atg ttc gcc agg ttg atc	818
Phe Val Phe Leu Val Glu Met Gly Phe Thr Met Phe Ala Arg Leu Ile	
255 260 265	
ttg atc tct gga cct tgt gat ctg cct gcc tgg gcc tcc caa agt gct	866
Leu Ile Ser Gly Pro Cys Asp Leu Pro Ala Ser Ala Ser Gln Ser Ala	
270 275 280	
ggg att aca ggc gtg agc cac cac gcc cgg ctt att ttt aat ttt tgt	914
Gly Ile Thr Gly Val Ser His His Ala Arg Leu Ile Phe Asn Phe Cys	
285 290 295 300	
ttg ttt gaa atg gaa tct cac tct gtt acc cag gct gga gtg caa tgg	962
Leu Phe Glu Met Glu Ser His Ser Val Thr Gln Ala Gly Val Gln Trp	
305 310 315	
cca aat ctc ggc tca ctg caa cct ctg cct ccc ggg ctc aag cga ttc	1010
Pro Asn Leu Gly Ser Leu Gln Pro Leu Pro Pro Gly Leu Lys Arg Phe	
320 325 330	

tcc tgt ctc agc ctc cca agc agc tgg gat tac ggg cac ctg cca cca 1058
 Ser Cys Leu Ser Leu Pro Ser Ser Trp Asp Tyr Gly His Leu Pro Pro
 335 340 345

cac ccc gct aat ttt tgt att ttc att aga ggc ggg gtt tca cca tat 1106
 His Pro Ala Asn Phe Cys Ile Phe Ile Arg Gly Gly Val Ser Pro Tyr
 350 355 360

ttg tca ggc tgg tct caa act cct gac ctc agg tgacccacct gcctcagcct 1159
 Leu Ser Gly Trp Ser Gln Thr Pro Asp Leu Arg
 365 370 375

tccaaagtgc tgggattaca ggcgtgagcc acctcaccca gccggctaatt ttagataaaa 1219
 aaatatgtag caatggggggg tcttgctatg ttgccaggc tgggtotcaaa cttctggctt 1279
 catgcaatcc ttccaaatga gccacaacac ccagccagtc acatttttta aacagttaca 1339
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<210> 2

<211> 122

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Neural thread
 protein

<400> 2

Met Met Val Cys Trp Asn Arg Phe Gly Lys Trp Val Tyr Phe Ile Ser
 1 5 10 15

Ala Ile Phe Asn Phe Gly Pro Arg Tyr Leu Tyr His Gly Val Pro Phe
 20 25 30

Tyr Phe Leu Ile Leu Val Arg Ile Ile Ser Phe Leu Ile Gly Asp Met
 35 40 45

Glu Asp Val Leu Leu Asn Cys Thr Leu Leu Lys Arg Ser Ser Arg Phe
 50 55 60

Arg Phe Trp Gly Ala Leu Val Cys Ser Met Asp Ser Cys Arg Phe Ser
 65 70 75 80

Arg Val Ala Val Thr Tyr Arg Phe Ile Thr Leu Leu Asn Ile Pro Ser
 85 90 95

Pro Ala Val Trp Met Ala Arg Asn Thr Ile Asp Gln Gln Val Leu Ser
 100 105 110

Arg Ile Lys Leu Glu Ile Lys Arg Cys Leu
 115 120

<210> 3
 <211> 112
 <212> PRT
 <213> Homo sapiens

<400> 3
 Met Ala Gln Ser Arg Leu Thr Ala Thr Ser Ala Ser Arg Val Gln Ala
 1 5 10 15
 Ile Leu Leu Ser Gln Pro Pro Lys Gln Leu Gly Leu Arg Ala Pro Ala
 20 25 30
 Asn Thr Pro Leu Ile Phe Val Phe Ser Leu Glu Ala Gly Phe His His
 35 40 45
 Ile Cys Gln Ala Gly Leu Lys Leu Leu Thr Ser Gly Asp Pro Pro Ala
 50 55 60
 Ser Ala Phe Gln Ser Ala Gly Ile Thr Gly Val Ser His Leu Thr Gln
 65 70 75 80
 Pro Ala Asn Leu Asp Lys Lys Ile Cys Ser Asn Gly Gly Ser Cys Tyr
 85 90 95
 Val Ala Gln Ala Gly Leu Lys Leu Leu Ala Ser Cys Asn Pro Ser Lys
 100 105 110

<210> 4
 <211> 106
 <212> PRT
 <213> Homo sapiens

<400> 4
 Met Trp Thr Leu Lys Ser Ser Leu Val Leu Leu Cys Leu Thr Cys
 1 5 10 15
 Ser Tyr Ala Phe Met Phe Ser Ser Leu Arg Gln Lys Thr Ser Glu Pro
 20 25 30
 Gln Gly Lys Val Pro Cys Gly Glu His Phe Arg Ile Arg Gln Asn Leu
 35 40 45
 Pro Glu His Thr Gln Gly Trp Leu Gly Ser Lys Trp Leu Trp Leu Leu
 50 55 60
 Phe Ala Val Val Pro Phe Val Ile Leu Lys Cys Gln Arg Asp Ser Glu
 65 70 75 80
 Lys Asn Lys Val Arg Met Ala Pro Phe Phe Leu His His Ile Asp Ser
 85 90 95
 Ile Ser Gly Val Ser Gly Lys Arg Met Phe
 100 105

00100 5
 00110 106
 00120 PRT
 00130 Homo sapiens

04000 5
 Met Phe Phe Val Leu Tyr Arg Phe Cys Phe Cys Phe Phe Glu Thr Glu
 1 5 10 15
 Ser His Ser Leu Thr Gln Ala Gly Val Gln Trp Cys Glu Leu Gly Ser
 20 25 30
 Pro Gln Pro Leu Pro Ser Gly Phe Lys Arg Phe Ser Cys Leu Ser Leu
 35 40 45
 Leu Ser Ser Trp Asp Tyr Ser His Glu Pro Pro His Pro Val Ile Cys
 50 55 60
 Ser Phe Leu Met Glu Lys Cys Leu Ile Leu Tyr Lys Pro Asn Gly Asp
 65 70 75 80
 Thr Ile Gly Pro Ile Leu Val Gln Gln Gly Lys Arg Gln Lys Leu Tyr
 85 90 95
 Ile Ser Ala Asp Leu Val His Leu Ile Ala
 100 105

00100 6
 00110 98
 00120 PRT
 00130 Unknown Organism

00200
 00220 Description of Unknown Organism: Neural thread
 protein

04000 6
 Glu Ala Tyr Tyr Thr Met Leu His Leu Pro Thr Thr Asn Arg Pro Lys
 1 5 10 15
 Ile Ala His Cys Ile Leu Phe Asn Gln Pro His Ser Pro Arg Ser Asn
 20 25 30
 Ser His Ser His Pro Asn Pro Leu Lys Leu His Arg Arg Ser His Ser
 35 40 45
 His Asn Arg Pro Arg Ala Tyr Ile Leu Ile Thr Ile Leu Pro Ser Lys
 50 55 60
 Leu Lys Leu Arg Thr His Ser Gln Ser His His Asn Pro Leu Ser Arg
 65 70 75 80
 Thr Ser Asn Ser Thr Pro Thr Asn Ser Phe Leu Met Thr Ser Ser Lys
 85 90 95
 Pro Arg

<210> 7
 <211> 75
 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Neural thread
 protein

<400> 7
 Ser Ser Ser Leu Gly Leu Pro Lys Cys Trp Asp Tyr Arg His Glu Leu
 1 5 10 15
 Leu Ser Leu Ala Leu Met Ile Asn Phe Arg Val Met Ala Cys Thr Phe
 20 25 30
 Lys Gln His Ile Glu Leu Arg Gln Lys Ile Ser Ile Val Pro Arg Lys
 35 40 45
 Leu Cys Cys Met Gly Pro Val Cys Pro Val Lys Ile Ala Leu Leu Thr
 50 55 60
 Ile Asn Gly His Cys Thr Trp Leu Pro Ala Ser
 65 70 75

<210> 8
 <211> 68
 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Neural thread
 protein

<400> 8
 Met Phe Val Phe Cys Leu Ile Leu Asn Arg Glu Lys Ile Lys Gly Gly
 1 5 10 15
 Asn Ser Ser Phe Phe Leu Leu Ser Phe Phe Phe Ser Phe Gln Asn Cys
 20 25 30
 Cys Gln Cys Phe Gln Cys Arg Thr Thr Glu Gly Tyr Ala Val Glu Cys
 35 40 45
 Phe Tyr Cys Leu Val Asp Lys Ala Ala Phe Glu Cys Trp Trp Phe Tyr
 50 55 60
 Ser Phe Asp Thr
 65

<210> 9
 <211> 61
 <212> PRT
 <213> Homo sapiens

<400> 9

Met Glu Pro His Thr Val Ala Gln Ala Gly Val Pro Gln His Asp Leu
 1 5 10 15

Gly Ser Leu Gln Ser Leu Leu Pro Arg Phe Lys Arg Phe Ser Cys Leu
 20 25 30

Ile Leu Pro Lys Ile Trp Asp Tyr Arg Asn Met Asn Thr Ala Leu Ile
 35 40 45

Lys Arg Asn Arg Tyr Thr Pro Glu Thr Gly Arg Lys Ser
 50 55 60

<210> 10

<211> 375

<212> PRT

<213> Homo sapiens

<400> 10

Met Glu Phe Ser Leu Leu Leu Pro Arg Leu Glu Cys Asn Gly Ala Ile
 1 5 10 15

Ser Ala His Arg Asn Leu Arg Leu Pro Gly Ser Ser Asp Ser Pro Ala
 20 25 30

Ser Ala Ser Pro Val Ala Gly Ile Thr Gly Met Cys Thr His Ala Arg
 35 40 45

Leu Ile Leu Tyr Phe Phe Leu Val Glu Met Glu Phe Leu His Val Gly
 50 55 60

Gln Ala Gly Leu Glu Leu Pro Thr Ser Asp Asp Pro Ser Val Ser Ala
 65 70 75 80

Ser Gln Ser Ala Arg Tyr Arg Thr Gly His His Ala Arg Leu Cys Leu
 85 90 95

Ala Asn Phe Cys Gly Arg Asn Arg Val Ser Leu Met Cys Pro Ser Trp
 100 105 110

Ser Pro Glu Leu Lys Gln Ser Thr Cys Leu Ser Leu Pro Lys Cys Trp
 115 120 125

Asp Tyr Arg Arg Ala Ala Val Pro Gly Leu Phe Ile Leu Phe Phe Leu
 130 135 140

Arg His Arg Cys Pro Thr Leu Thr Gln Asp Glu Val Gln Trp Cys Asp
 145 150 155 160

His Ser Ser Leu Gln Pro Ser Thr Pro Glu Ile Lys His Pro Pro Ala
 165 170 175

Ser Ala Ser Gln Val Ala Gly Thr Lys Asp Met His His Tyr Thr Trp
 180 185 190

Leu Ile Phe Ile Phe Ile Phe Asn Phe Leu Arg Gln Ser Leu Asn Ser
 195 200 205
 Val Thr Gln Ala Gly Val Gln Trp Arg Asn Leu Gly Ser Leu Gln Pro
 210 215 220
 Leu Pro Pro Gly Phe Lys Leu Phe Ser Cys Pro Ser Leu Leu Ser Ser
 225 230 235 240
 Trp Asp Tyr Arg Arg Pro Pro Arg Leu Ala Asn Phe Phe Val Phe Leu
 245 250 255
 Val Glu Met Gly Phe Thr Met Phe Ala Arg Leu Ile Leu Ile Ser Gly
 260 265 270
 Pro Cys Asp Leu Pro Ala Ser Ala Ser Gln Ser Ala Gly Ile Thr Gly
 275 280 285
 Val Ser His His Ala Arg Leu Ile Phe Asn Phe Cys Leu Phe Glu Met
 290 295 300
 Glu Ser His Ser Val Thr Gln Ala Gly Val Gln Trp Pro Asn Leu Gly
 305 310 315 320
 Ser Leu Gln Pro Leu Pro Pro Gly Leu Lys Arg Phe Ser Cys Leu Ser
 325 330 335
 Leu Pro Ser Ser Trp Asp Tyr Gly His Leu Pro Pro His Pro Ala Asn
 340 345 350
 Phe Cys Ile Phe Ile Arg Gly Gly Val Ser Pro Tyr Leu Ser Gly Trp
 355 360 365
 Ser Gln Thr Pro Asp Leu Arg
 370 375

<110> 11

<111> 6

<112> PRT

<113> Artificial Sequence

<120>

<123> Description of Artificial Sequence: 6-His tag

<400> 11

His His His His His His

1

5